Analytic families of multilinear operators

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We prove complex interpolation theorems for analytic families of multilinear operators defined on quasi-Banach spaces, with explicit constants on the intermediate spaces. We obtain analogous results for analytic families of operators defined on spaces generated by the Caldern method applied to couples of quasi-Banach lattices with nontrivial lattice convexity. As an application we derive a multilinear version of Stein's classical interpolation theorem for analytic families of operators taking values in Lebesgue, Lorentz, and Hardy spaces. We use this theorem to prove that the bilinear Bochner-Riesz operator is bounded from $L^p(\mathbb{R}^n) \times L^p(\mathbb{R}^n)$ into $L^{p/2}(\mathbb{R}^n)$ for $1 < p < 2$.